REMARKS

The final Office Action dated December 28, 2004, was a final rejection of claims 1-13, 15, and 17-30 of the above-referenced patent application. However, the Applicants believe that the application is in condition for allowance because the claims are novel and nonobvious over the cited art. Thus, the Applicants respectfully request further examination and reconsideration of the subject application. The reasons for this belief in the novelty and nonobviousness of the rejected claims are presented below.

Section 103(a) Rejections

The final Office Action rejected claims 1-5, 7-9, 15, 17, 25-27, 29 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Martin et al. (U.S. Patent No. 5,877,801) in view of Gutta et al. (U.S. Patent Application Publication No. US 2002/0101505 A1)).

Regarding independent claim 1, the final Office Action contended that Martin et al. disclose all elements of the Applicants' claimed invention except for specifically teaching "the camera system that provides a seamless omni-directional image of the event that automatically tracks event participant simultaneously to determine the event participants that are speaking using audio analysis including a microphone-array sound source localization technique to alleviate camera view switching delays and the automated online broadcasting system including a tracker module that controls and uses the camera system and video tracking techniques to monitor and keep track of each of the tracked event participants simultaneously."

Regarding independent claims 8 and 29, the final Office Action contended that Martin et al. disclose all elements of the Applicants' claimed invention except for specifically teaching "using the camera system to provide a seamless omni-directional image that contains each of the event participants, determining the location of the event participants automatically by using a speaker detecting technique to determine the event participants that are speaking and tracking multiple event participants simultaneously using the speaker detecting techniques and a video tracking technique."

However, the final Office Action maintained that Gutta et al. disclose all of these elements. Therefore, the final Office Action maintained that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Martin et al. using the teachings of Gutta et al.

In response, the Applicants respectfully traverse these rejections. In general, the Applicants submit that the combination of Martin et al. and Gutta et al. is lacking at least one element of the Applicants' claimed invention. More specifically, combination of Martin et al. and Gutta et al. does not disclose, either explicitly or implicitly, the material claimed feature of using both audio and video tracking techniques to **simultaneously** track each of the event participants. In other words, the combination lacks the claimed feature of tracking multiple event participants simultaneously. The combination only finds one speaker at a time.

Further, the combination of Martin et al. and Gutta et al. fails to appreciate the advantages of this claimed feature. In addition, there is no technical suggestion or motivation disclosed in Martin et al. and Gutta et al. to define this claimed feature. Thus, the Applicants submit that the combination of Martin et al. and Gutta et al. cannot make obvious the Applicants' claimed feature mentioned above with regard to claims 1, 8 and 29.

To make a prima facie showing of obviousness, all of the claimed features of an Applicant's invention must be considered, especially when they are missing from the prior art. If a claimed feature is not disclosed in the prior art and has advantages not appreciated by the prior art, then no prima facie showing of obviousness has been made. The Federal Circuit Court has held that it was an error not to distinguish claims over a combination of prior art references where a material limitation in the claimed system and its purpose was not taught therein. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Moreover, as stated in the MPEP, if a prior art reference does not disclose, suggest or provide any motivation for at least one claimed feature of an

Applicant's invention, then a prima facie case of obviousness has not been established (MPEP § 2142).

Independent Claims 1, 8 and 29

Independent claim 1 of the Applicants' claimed invention includes an automated event presentation system for capturing and viewing an event having event participants. The system includes an omni-directional camera system that provides a seamless omni-directional image of the event and that automatically tracks event participants simultaneously to determine the event participants that are speaking using audio analysis including a microphone-array sound source localization technique to alleviate camera view switching delays and films the event. The system further includes an automated online broadcasting system including a tracker module that controls and uses the omni-directional camera system and video tracking techniques to monitor and keep track of each of the tracked event participants simultaneously, and broadcasts the event. The system also includes a viewer platform in communication with the automated online broadcasting system that allows a viewer to view the broadcasted event.

Independent claim 8 of the Applicants' claimed invention includes a method for filming and recording an event having event participants and presenting the event to a viewer. The method includes filming and recording the event using an omni-directional camera system to provide a seamless omni-directional image that contains each of the event participants, and automatically determining a location of the event participants in the omni-directional image by using a speaker detection technique to determine the event participants that are speaking. The method also includes tracking multiple event participants simultaneously using the speaker detection technique and a video tracking technique, and providing a user interface that allows a choice of which of the event participants in the omni-directional image to view, the choice being made by at least one of: (a) manually by the viewer; (b) automatically by a virtual director. The method further includes switching instantaneously between views of the event participants in the omni-directional image in response to the choice.

Independent claim 29 of the Applicants' claimed invention includes an automated event presentation system for capturing and viewing an event having multiple event participants. The system includes an omni-directional camera system that provides a seamless omni-directional image of the event, and a tracker module that determines a number of the multiple event participants and automatically tracks the number of multiple event participants simultaneously within the omni-directional image using audio-based tracking techniques and video-based tracking techniques combined in a probabilistic manner to obtain audio and video tracking results. The system also includes a virtual director module that uses a probabilistic finite state machine and receives as input the audio and video tracking results to automatically select without user intervention at least a portion of the omni-directional image for use as an output view. The system further includes an automated online broadcasting system that broadcasts the output view and the omni-directional image over a computer network, and a viewer platform in communication with the automated online broadcasting system that allows a viewer to view at least one of: (a) the output view; (b) the omni-directional image.

The Applicants' claimed invention uses both audio and video tracking techniques to simultaneously track each of the event participants. In other words, the claimed invention tracks multiple event participants simultaneously. This allows the presentation system and method to determine the number of meeting participants and keep track of these multiple subjects simultaneously (specification, paragraph 0045, lines 5-7). Different types of audio and video tracking techniques may be used, such as sound source localization, motion detection and skin color techniques (specification, paragraph 0048, lines 1-4). Using both audio and video tracking techniques allows the two techniques to cross-check each other. For example, if the audio tracking technique determines that a person is at a certain location in the meeting room, the video image can be checked at that location using video tracking techniques to verify. Moreover, if the person moves but is not speaking the video tracking technique can be used to keep track of the person (even when the person is not talking). When the person speaks again, the audio tracking technique can be used to cross-check the video tracking technique, thereby improving accuracy. Thus, the

presentation system and method of claims 1, 8 and 29 use both audio and video-based tracking together to track each of the multiple event participants simultaneously to improve accuracy.

In contrast, Gutta et al. finds only one speaker at a time. Specifically, Gutta et al. merely disclose using audio techniques, video techniques, or both, to predict an event (such as the next speaker) in a video conference setting (paragraph [0008], lines 1-4). Gutta et al. uses an adaptive position locator 300 to process audio and video information to determine a location of a speaker (paragraph [0028], lines 3-6). A "PTZ camera 18 generates an image 40 that includes an object of interest, such as a videoconference participant 22-k, and an additional objects, such as another participant 22-k+1 adjacent to the object of interest" (paragraph [0024], lines 1-4). This image containing the "object of interest" then is supplied as video input to the detection and tracking operation 32 (paragraph [0024], lines 4-8). The "object of interest 22-k may correspond to the current speaker" (paragraph [0025], lines 1-3). In addition, the object of interest may be a participant that is predicted to be the next speaker (paragraph [0029], lines 1-5). However, Gutta et al. merely discloses finding a single speaker (a current or predicted next speaker) at a time. On the other hand, the Applicants' claimed invention includes simultaneously tracking multiple event participants simultaneously.

Martin et al. adds nothing to the cited combination that would render the Applicants' claimed invention obvious. As stated in the final Office Action, Martin et al. does not disclose using audio and video techniques to simultaneously track each of the event participants.

It is not obvious to track multiple persons simultaneously given Gutta et al. and Martin et al. *Tracking each of the event participants simultaneously involves a whole new set of problems as compared to finding, tracking or predicting a single speaker.* For example, one problem is maintaining the identity of occluded participants being tracked, such that the tracker may fail when participants get close to each other.

Consequently, the combination of Martin et al. and Gutta et al. provides no motivation or suggestion for this claimed feature of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

The combination of Martin et al. and Gutta et al. also fails to appreciate or recognize the advantages of the Applicants' claimed tracking of multiple participants simultaneously using audio and video tracking techniques. As noted above, the Applicants' claimed tracking allows the presentation system and method to determine the number of meeting participants and keep track of them simultaneously (specification, paragraph 0045, lines 3-7). Unlike the combination of Martin et al. and Gutta et al., the Applicants' claimed invention tracks multiple participants simultaneously, such that the location and identity of each participant is known at all times. Neither Martin et al. and Gutta et al. appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Martin et al. and Gutta et al. fail to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of using both audio and video tracking techniques to simultaneously track each of the event participants. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Martin et al. and Gutta et al., either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least one material feature of the Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital

Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that independent claims 1, 8 and 29 are patentable under 35 U.S.C. § 103(a) over Martin et al. in view of Gutta et al. based on the legal and technical arguments set forth above and below. Moreover, claims 2-5, 7 and 25-27 depend from independent claim 1, claims 9, 15 and 17 depend from independent claim 8, and claim 30 depends from independent claim 29 and are also nonobvious over Martin et al. in view of Gutta et al. (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 1-5, 7-9, 15, 17, 25-27, 29 and 30.

The final Office Action rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Martin et al. in view of Gutta et al. and further in view of Washino et al. (U.S. Patent No. 5,625,410). The final Office Action contended that Martin et al. and Gutta et al. disclose all elements of the Applicants' claimed invention except for specifically teaching "the camera system having a resolution of approximately 1000 by 1000 pixels." However, the final Office Action maintained that Washino et al. discloses this feature. Therefore, the final Office Action maintained that it would have been obvious to a person of ordinary skill in the art at the time the invention was made "to modify the combination of Martin and Gutta including the camera having the resolution of approximately 1000 by 1000 pixels, as per teaching of Washino, in order to provide better quality of images to viewers."

In response, the Applicants respectfully traverse these rejections based on the arguments. In general, the Applicants submit that the combination of Martin et al., Gutta et al. and Washino et al. is lacking at least one element of the Applicants' claimed invention. More specifically, combination does not disclose, either explicitly or implicitly, the material of using both audio and video tracking techniques to simultaneously track each of the

event participants.

Further, the combination of Martin et al., Gutta et al. and Washino et al. fails to appreciate the advantages of this claimed feature. In addition, there is no technical suggestion or motivation disclosed in Martin et al., Gutta et al. and Washino et al. to define this claimed feature. Thus, the Applicants submit that the combination of Martin et al., Gutta et al. and Washino et al. cannot make obvious the Applicants' claimed feature of using both audio and video tracking techniques to simultaneously track each of the event participants.

It was explained above why Martin et al. and Gutta et al. do not disclose the Applicants' claimed feature. Washino et al. adds nothing to the cited combination that would render the Applicants' claimed invention obvious. Washino et al. merely discloses a generic video conferencing system that does not employ audio and video tracking. Consequently, the combination of Martin et al., Gutta et al. and Washino et al. provides no motivation or suggestion for this claimed feature of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

The combination of Martin et al., Gutta et al. and Washino et al. also fails to appreciate or recognize the advantages of the Applicants' claimed tracking of multiple participants simultaneously using audio and video tracking techniques. As noted above, the Applicants' claimed tracking allows the presentation system and method to determine the number of meeting participants and track them simultaneously, such that the location and identity of each participant is known at all times. Neither Martin et al., Gutta et al. nor Washino et al. appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Martin et al., Gutta et al. and Washino et al. fails to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of using both audio and video

tracking techniques to simultaneously track each of the event participants. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Martin et al., Gutta et al. and Washino et al., either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least one material feature of the Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that independent claims 1 is patentable under 35 U.S.C. § 103(a) over Martin et al. in view of Gutta et al. and further in view of Washino et al. based on the legal and technical arguments set forth above and below. Moreover, claim 6 depends from independent claim 1 and is also nonobvious over Martin et al. in view of Gutta et al. and further in view of Washino et al. (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claim 6.

The final Office Action rejected claims 10-13 under 35 U.S.C. § 103(a) as being unpatentable over Martin et al. in view of Gutta et al. as applied to claim 8, and further in view of Kannes (U.S. Patent No. 5,382,972). The final Office Action contended that the combination of Martin et al., Gutta et al. disclose or suggest most of the elements of the Applicants' claimed invention except that the combination "differs from the claimed invention in not specifically teaching to store annotation associated with the event and synchronizing this annotations with the event for allowing the view to select which of the

annotation to store while the event is occurring or after the event occurring, wherein the annotations is a digital chat regarding the event." (sic) However, the final Office Action maintained that Kannes teaches this feature. Thus, the final Office Action contended that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of Martin and Gutta in storing annotation associated with the event and synchronizing this annotations with the event. . ." (sic)

In response, the Applicants respectfully traverse this rejection based on the legal and technical analysis above and below. The Applicants submit that the combination of Martin et al., Gutta et al. and Kannes lacks at least one claimed feature of the Applicants' invention. In particular, the combination does not disclose, either explicitly or implicitly, the material claimed feature of using both audio and video tracking techniques to simultaneously track each of the event participants. Further, the combination also fails to appreciate the advantages of this claimed feature. In addition, there is no technical suggestion or motivation disclosed in Martin et al., Gutta et al. or Kannes to define this claimed feature. Thus, the Applicants submit that the combination of Martin et al., Gutta et al. and Kannes cannot make obvious the Applicants' claimed feature of using both audio and video tracking techniques to simultaneously track each of the event participants.

As noted above, amended independent claim 8 of the Applicants' claimed invention includes a method for filming and recording an event having event participants and presenting the event to a viewer. The method includes filming and recording the event using an omni-directional camera system to provide a seamless omni-directional image that contains each of the event participants, automatically determining a location of the event participants in the omni-directional image by using a speaker detection technique to determine the event participants that are speaking, and tracking multiple event participants simultaneously using the speaker detection technique and a video tracking technique. The method further includes providing a user interface that allows a choice of which of the event participants in the omni-directional image to view, the choice being made by at least one of: (a) manually by the viewer; (b) automatically by a virtual director, and switching instantaneously between views of the event participants in the omni-directional image in

response to the choice.

In contrast, as noted above, the combination of Martin et al. and Gutta et al. merely disclose a method that uses audio and video techniques to find a current speaker or a predicted next speaker. Unlike the Applicants' claimed invention, however, the feature of simultaneously tracking each of the event participants using audio and video techniques is not disclosed. In addition, Kannes adds nothing to the cited combination that would render the Applicants' claimed invention obvious. Kannes merely uses a simplistic rule that selects a camera based on which event participant is currently speaking.

Consequently, the combination of Martin et al., Gutta et al. and Kannes provides no motivation or suggestion for this claimed feature of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

The combination of Martin et al., Gutta et al. and Kannes also fails to appreciate or recognize the advantages of the Applicants' claimed feature of simultaneously tracking each of the event participants using audio and video techniques. The Applicants' claimed tracking allows the presentation system and method to determine the number of meeting participants and keep track of them simultaneously (specification, paragraph 0045, lines 3-7). Unlike the combination of Martin et al., Gutta et al. and Kannes, the Applicants' claimed invention tracks participants even when they are not the principle speaker or the predicted next speaker, such that the location and identity of each participant is known at all times. Neither Martin et al., Gutta et al. nor Kannes appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Martin et al., Gutta et al. and Kannes fails to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of simultaneously tracking each of the event participants using audio and video techniques. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide

motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Martin et al., Gutta et al. and Kannes, either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least one material feature of the Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that independent claim 8 is patentable under 35 U.S.C. § 103(a) over Martin et al. in view of Gutta et al. as applied to claim 8, and further in view of Kannes, based on the legal and technical arguments set forth above. Moreover, claims 10-13 depend from independent claim 8 and are also nonobvious over Martin et al. in view of Gutta et al. as applied to claim 8, and further in view of Kannes (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 10-13.

The final Office Action rejected claims 18-24 and 28 under 35 U.S.C. § 103(a) as being unpatentable over Martin et al. in view of Gutta et al. and Ono (U.S. Patent No. 6,133,941). The final Office Action contended that Martin et al. and Gutta et al. disclose all elements of the Applicants' claimed invention except for specifically teaching "a computer network for transmitting the image from the broadcasting platform to the viewer platform." However, the final Office Action maintained that Ono discloses this feature. Therefore, the final Office Action maintained that it would have been obvious to a person of ordinary skill in the art at the time the invention was made "to modify the combination of Martin and Gutta in using the computer network for transmitting the image from the broadcasting platform to the viewer platform, as per teaching of Ono, in order to improve the operability."

In response, the Applicants respectfully traverse these rejections based on the legal and technical analysis above and below. In general, the Applicants submit that the combination of Martin et al., Gutta et al. and Ono is lacking at least one element of the Applicants' claimed invention. More specifically, regarding independent claim 18, the combination does not disclose, either explicitly or implicitly, the material claimed feature of simultaneously tracking each event participant using audio and video tracking techniques. Regarding independent claim 21, the combination does not disclose, either explicitly or implicitly, the material claimed feature of a virtual director module within the automated online broadcasting system that uses a probabilistic finite state machine and applies a set of video production rules.

Further, the combination of Martin et al., Gutta et al. and Ono fails to appreciate the advantages of these claimed features. In addition, there is no technical suggestion or motivation disclosed in Martin et al., Gutta et al. and Ono to define these claimed features. Thus, the Applicants submit that the combination of Martin et al., Gutta et al. and Ono cannot make obvious the Applicants' claimed features of: (1) regarding claim 18, simultaneously tracking each event participant using audio and video tracking techniques; and, (2) regarding claim 21, a virtual director module within the automated online broadcasting system that uses a probabilistic finite state machine and applies a set of video production rules.

Independent Claim 18

Independent claim 18 of the Applicants' claimed invention includes a method for displaying at least a portion of a seamless omni-directional image capturing an event occurring within an event environment. The method includes filming the event and automatically tracking multiple event participants simultaneously using audio and video processing techniques and a single omni-directional camera system having a single camera to produce the seamless omni-directional image, and transmitting the omni-directional image from a broadcasting platform to a viewer platform using a computer network. The method further includes using the viewer platform to allow a viewer to select

which portion of the omni-directional image the viewer would like to view, and switching instantaneously between views of the omni-directional image by presenting a desired portion of the omni-directional image as selected by the viewer.

In contrast, as explained above, neither Martin et al. nor Gutta et al. disclose or suggest the Applicants' claimed invention. Ono adds nothing to the cited combination that would render the Applicants' claimed invention obvious. Ono merely discloses a camera control system and method to remotely control a camera over a computer network. However, nowhere does Ono discuss the Applicants' claimed feature of simultaneously tracking multiple event participant using audio and video tracking techniques. Consequently, no motivation or suggestion for this feature of the Applicants' claimed invention is provided. Absent this motivation or suggestion, Ono cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

Consequently, the combination of Martin et al., Gutta et al. and Ono provides no motivation or suggestion for this claimed feature of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

The combination of Martin et al., Gutta et al. and Ono also fails to appreciate or recognize the advantages of the Applicants' claimed tracking of multiple participants simultaneously using audio and video tracking techniques. As noted above, the Applicants' claimed tracking allows the presentation system and method to determine the number of meeting participants and keep track of them simultaneously (specification, paragraph 0045, lines 3-7). Unlike the combination of Martin et al., Gutta et al. and Ono, the Applicants' claimed invention tracks multiple participants simultaneously, such that the location and identity of each participant is known at all times. Neither Martin et al., Gutta et al. nor Ono appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the

combination of Martin et al., Gutta et al. and Ono fail to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of simultaneously tracking each event participant using audio and video tracking techniques. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Independent Claim 21

Amended independent claim 1 of the Applicants' claimed invention includes an automated event presentation system for capturing an event. The system includes a high-resolution omni-directional camera system that provides an omni-directional image of the event, where the omni-directional image containing multiple camera views. The system also includes an automated online broadcasting system capable of broadcasting the omni-directional image over a computer network, and a viewer platform in communication with computer network that receives the omni-directional image, and a virtual director module within the automated online broadcasting system that uses a probabilistic finite state machine to determine which of the multiple camera views within the omni-directional image to display on the viewer platform by applying a set of expert production rules based at least in part on a display history of an event participant.

The Applicants' claimed invention uses a probabilistic finite state machine to determine which view to display to the viewer platform. As in known to those having ordinary skill in the art, there are two types of finite state machines (FSM). One type is a deterministic FSM, which is where the next state is uniquely determined by a single input event. In other words, given an input and the current state, the state transition can be predicted. Thus, the time evolution of the deterministic FSM can be predicted exactly.

At the other end of the spectrum is the other type of FSM, the probabilistic (or non-deterministic) FSM. The next state of the probabilistic FSM depends not only on the current input event but also on an arbitrary number of subsequent input events. Until these subsequent events occur it is impossible to determine the state of the machine. In

other words, with a probabilistic FSM, given the current state it is impossible to predict the state transition.

In the Applicants' claimed invention, a probabilistic FSM is used to determine the expert video production rules. For example, one such expert video production rule determines which camera view is an output camera view. Other examples of expert video production rules are found in the Applicants' specification (paragraph 0051 and paragraph 0052). These expert production rules include keeping the camera view on a person even if another person begins talking if the camera has only been on the first person for a short amount of time (specification, paragraph 0051). In addition, these rules include switching the camera view off a person who is talking if that person has been talking for a long period of time (specification, paragraph 0052). By using a probabilistic FSM, the Applicants' claimed invention ensures that events (such as to which person to switch the camera view) are randomly determined.

In contrast, neither Martin et al., Gutta et al. nor Ono disclose or suggest the Applicants' claimed invention. Martin et al. merely disclose an omnidirectional image viewing system. Gutta et al. merely disclose using audio techniques, video techniques, or both, to find a current speaker or a predicted next speaker. Ono merely discloses a camera control system and method to remotely control a camera over a computer network. However, nowhere do Martin et al., Gutta et al. or Ono discuss the Applicants' claimed feature of a virtual director module that applies expert video production rules based at least in part on a display history of an event participant.

The combination merely indicates when a person will likely begin or stop speaking. If, for example, two people are speaking rapidly back and forth, the combination would rapidly switch back and forth between whoever was speaking. However, this would of course provide a user with a poor viewing experience. Conversely, in this example, the Applicants' claimed probabilistic finite state machine using a set of expert production rules would not blindly switch rapidly between the two, because this would violate the expert production rules.

Consequently, no motivation or suggestion for this feature of the Applicants' claimed invention is provided. Absent this motivation or suggestion, the combination of Martin et al., Gutta et al. and Ono cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

Martin et al., Gutta et al. and Ono also both fail to appreciate or recognize the advantages of the Applicants' claimed virtual director module within the automated online broadcasting system that uses a probabilistic finite state machine and applies a set of video production rules. The Applicants' claimed probabilistic finite state machine applying expert video production rules provides "a flexible control framework" such that the "parameters to the rules above are easily changeable, plus many of the parameters are sampled from distributions" (specification, paragraph 0053, lines 1-4). This results in better, more realistic presentations because the virtual director "does not seem mechanical to the human viewers" (specification, paragraph 0053, lines 4-5). The combination of Martin et al., Gutta et al. and Ono does not discuss or appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Martin et al., Gutta et al. and Ono et al. fails to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of a virtual director module within the automated online broadcasting system that uses a probabilistic finite state machine and applies a set of video production rules.. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Martin et al., Gutta et al. and Ono, either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least the two material features of the Applicants' claimed invention discussed above. Consequently, because a prima

facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that independent claims 18 and 21 are patentable under 35 U.S.C. § 103(a) over Martin et al. in view of Gutta et al. and Ono based on the legal and technical arguments set forth above and below. Moreover, claims 19-20 depend from independent claim 18, and claims 22-24 and 28 depend from independent claim 21 and are also nonobvious over Martin et al. in view of Gutta et al. and Ono (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 18-24 and 28.

The final Office Action rejected claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Martin et al. in view of Gutta et al. and Ono. The final Office Action contended that the combination of Martin et al., Gutta et al. and Ono disclose each of the features or elements of the Applicants' claimed invention.

In response, the Applicants respectfully traverse this rejection based on the amendments to claim 21 and the legal and technical analysis above and below. The Applicants submit that the combination of Martin et al., Gutta et al., Ono lacks at least one claimed feature of the Applicants' invention. In particular, in addition to lacking the claimed features argued above with regard to claim 21, the combination of Martin et al., Gutta et al., Ono does not disclose, either explicitly or implicitly, the material claimed feature of a switching module capable of providing negative switching that allows switching to a camera view of a person speaking before the person begins to speak.

Further, the combination of Martin et al., Gutta et al., Ono fails to appreciate the advantages of this claimed feature. In addition, there is no technical suggestion or motivation disclosed in the combination to define this claimed feature. Thus, the

Applicants submit that the combination of Martin et al., Gutta et al., Ono cannot make obvious the Applicants' claimed feature.

Dependent Claim 24

Claim 24 of the Applicants' invention includes a switching module that is capable of providing *negative* switching. This negative switching allows the switching to a camera view of a person speaking before that person begins to speak. In other words, before a person begins to speak, the camera view shows that person that will speak.

This negative switching can only be performed on recorded (or on-demand) broadcasts. In particular, "for the recorded meeting it is even possible to achieve camera switching in negative time (*or negative switching*). In other words, the camera view changes from the person talking to the person that will talk next even before the next person starts talking" (specification, paragraph 0054, lines 19-22; emphasis added).

In contrast, the combination of Martin et al., Gutta et al., Ono fails to disclose or suggest this claimed feature of the Applicants' invention. The final Office Action maintained that Gutta et al. disclose this claimed feature at paragraph [0058]. The Applicants respectfully disagree. In these passages, Gutta et al. disclose that "the camera 18 can focus on the predicted speaker as soon as the participant begins to speak" (paragraph [0058], lines 4-6; emphasis added). In another implementation, Gutta et al. disclose selecting a corresponding image of the predicted speaker "as the output of the system 10 when the speaker begins to speak" (paragraph [0058], lines 4-6; emphasis added). In both embodiments of Gutta et al., the camera view is switched to or the image of the person is shown only after or when the person begins speaking. On the other hand, the Applicants' claimed invention includes negative switching that allows the switching to a camera view of a person speaking ***before*** that person begins to speak.

In addition to lacking this claimed feature of the Applicants' invention, the combination of Martin et al., Gutta et al., Ono also fails to appreciate or recognize the advantages of the Applicants' claimed feature of the switching module including negative switching. Specifically, the Applicants' claimed switching module including negative switching "allows a camera view to be switched without delay. Even a short delay between the time when a person begins speaking and the time when the camera view shows the speaker can be quite distracting to a viewer. This camera switching latency can distract the viewer to the point that the viewer has a negative viewing experience" (specification, paragraph 0054, lines 2-5). The combination of Martin et al., Gutta et al., Ono does not discuss or appreciate these advantages of the Applicants' claimed feature of a switching module capable of providing negative switching.

Therefore, as set forth in *In re Fine* and MPEP § 2142, the combination of I Martin et al., Gutta et al., Ono simply cannot render the Applicants' claimed invention obvious. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive", the rejection must be withdrawn. MPEP 2143.01; ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

Accordingly, the Applicants respectfully submit that independent claim 24 is patentable under 35 U.S.C. § 103(a) over Martin et al. In view of Gutta et al. and Ono based on the legal and technical arguments set forth above. The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Martin et al. in view of Gutta et al. and Ono.

Conclusion

In view of the arguments set forth above, the Applicants submit that claims 1-13, 15 and 17-30 are in condition for immediate allowance. The Examiner, therefore, is respectfully requested to withdraw the outstanding rejections of the claims and to pass all of the claims of this application to issue.

In an effort to expedite and further the prosecution of the subject application, the Applicants kindly invite the Examiner to telephone the Applicants' attorney at (805) 278-8855 if the Examiner has any comments, questions or concerns, wishes to discuss any aspect of the prosecution of this application, or desires any degree of clarification of this response.

Respectfully submitted,
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